Raúl Hernández Sánchez
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❖ Employment

- WaTER Institute and R-PARC Center member, Rice University, 2024 – present.
- Rice Advanced Materials Institute member, Rice University, 2024 – present.
- Associate Chair of Master's Degree in Applied Chemical Sciences, Rice University, 2023 – present
- Norman Hackerman Welch Young Investigator, Assistant Professor, Rice University, 2022 – present
- Adjunct Professor, University of Pittsburgh, 2022 – present
- Assistant Professor, University of Pittsburgh, 2018 – 2022
- Columbia Nano Initiative Postdoctoral Fellow, 2016 – 2018

❖ Education

- *CNI Postdoctoral Fellow*, Department of Chemistry, Columbia University, New York, NY, 01/2016 to 05/2018. Advisor: Prof. Colin Nuckolls
- *Ph.D. in Chemistry*, Department of Chemistry, Harvard University, Cambridge, MA, 08/2010 to 05/2015. Advisor: Prof. Theodore A. Betley
- *A.M. in Chemistry*, Department of Chemistry, Harvard University, Cambridge, MA, 08/2010 to 05/2012. Advisor: Prof. Theodore A. Betley
- B. S. in Chemistry, Department of Chemistry, ITESM Campus Monterrey, Monterrey, Mexico, 08/2005 to 05/2010. Advisor: Prof. Jesus Valencia

❖ Awards and Honors

2024 Named to The Atlas of Inspiring Hispanics/Latinx Scientists.
2023 C&EN Talented 12 class of 2023.
2021 NSF CAREER Award.
2020 ACS PRF Doctoral New Investigator Award.
2020 SNI Level I (National System of Researchers in México).
2016 Columbia Nano Initiative Postdoctoral Research Scientist Fellowship.
2015 Poster Prize Award 5th European Conference on Molecular Magnetism.
2015 Fellowship from the 5th European Conference on Molecular Magnetism.
2015 Featured in "Las 30 promesas" (The 30 promises) emitted by Grupo Editorial Expansion.
2012 ACS, Division of Inorganic Chemistry Student Travel Award.
2011 – **2012** CONACYT/Fundación México en Harvard Research Award.
2010 CONACYT/Fundación Mexico en Harvard Fellowship and Research Award, Fieser Graduate Research Award.
2008 Research Assistant Scholarship, Caltech.
2007 Summer Undergraduate Research Fellowship (SURF), Caltech.
2005 – **2010** Xorge A. Domínguez Scholarship, ITESM.
2005 – **2010** Special Chemistry Scholarship L.C.Q., ITESM.
2004 Honorary Mention in XV Mexican Physics Olympiad.

❖ Grant Proposals *Funded*

11. NSF Supplement "CAREER: Tubularenes: a novel class of conjugated molecular nanotubes". Single PI. Amount: $57,037.00. Period: 5/2024-4/2025.
10. Welch Foundation, "Carbon dioxide reduction facilitated by C–H anion recognition catalysts". Single PI. Amount: $300,000.00. Period: 6/2023-5/2026.
9. NSF MRI, "MRI: Acquisition of a Single Crystal X-Ray Diffractometer for Research and Education with Regional Impact". Collaborative. Amount: $308,651.70. Period: 9/2022-8/2025.
   Note*: this grant was transferred to co-PI Prof. Nathaniel Rosi due to departure to Rice University.*

8. National Science Foundation, "ERASE-PFAS: Bottom-up synthesis of polymeric membranes for PFAS sequestration". Single PI. Amount: $419,999.00. Period: 10/2022-08/2025.
7. Royal Society of Chemistry, Inclusion & Diversity Fund, "Science Clubs Mexico 2022: Inclusion and Diversity in Chemistry Education". Collaborative. Amount: £5,000.00. Period: 01/2022-08/2022.
6. University of Pittsburgh, Center for Research Computing, "Tubularenes: expanding the boundaries of carbon-based nanotubes". Single PI. Amount: $0, 900,000 SUs per year (computational service units). Period: 03/2021-02/2023.
5. National Science Foundation, "CAREER: Tubularenes: a novel class of conjugated molecular nanotubes". Single PI. Amount: $598,844.00. Period: 11/2022-12/2026.
4. American Chemical Society Petroleum Research Fund Doctoral New Investigator, "Recycling hydrocarbons at polynuclear reaction sites". Single PI. Amount: $110,000.00. Period: 09/2020-08/2022.
3. University of Pittsburgh, Pitt Momentum Funds, "Fuel recycling at copper catalysts". Single PI. Amount: $16,000.00. Period: 03/2020-06/2021.
2. University of Pittsburgh, Center for Research Computing, "Tubularenes: redefining carbon-based nanotubes". Single PI. Amount: $0, 1,300,000 SUs (computational units). Period: 03/2020-02/2021.
1. University of Pittsburgh, Central Research Development Fund, "Tubular[n]arenes: wire-like cylindrical organic conductors". Single PI. Amount: $18,000.00. Period: 07/2019-06/2021.

❖ Publications (Google scholar metrics: H-index=24; 2042 citations as of 10/07/2024)

Independent career (=corresponding author; §=equal contribution; undergraduate authors underlined)*

43. Mirzaei, S.;[§] Mirzaei, M. S.;[§] Espinoza Castro, V. M.; Videa, M.; Hernández Sánchez, R.* "Molecular Nanotube with Donor-Acceptor Properties". *In preparation*.
42. Arora, S.; Sharif, L.; Mirzaei, S.; Krishnan Achary, D.; Lamont, D.; Gillespie, J.; Espinoza Castro, V. M.; Hernández Sánchez, R.* "Clean water through anion recognition chemistry ". *In preparation*.
41. Espinoza Castro, V.;[§] Mirzaei, S.;[§] Bilal, Mohammad; Hernández Sánchez, R.* "Quantum confinement at molecular nanotubes". *In preparation*.
40. Osei, M.;[§] Awasthi, D.;[§] Shee, J.;* Hernández Sánchez, R.* "Cluster dimerization mediated by anagostic interactions ". *In preparation*.
39. Mirzaei, S.; Hu, X.; Mirzaei, M. S.; Espinoza Castro, V. M.; Wang, X.; Figueroa, N. A.; Chang, T.; Chen, Y.-P.; Prieto Ríos, G.; Gonzalez-Pech, N. I.; Chen, Y.-S.; Hernández Sánchez, R.* "Catching fullerenes: synthesis of molecular nanogloves". *Under review*.
38. Mirzaei, M. S.;[§] Mirzaei, S.;[§] Espinoza Castro, V.; Lawrence, C.; Hernández Sánchez, R.* "Dual molecular tweezers extending from a nanohoop ". *Chem. Commun.* **2024**, *60*, 14236.
37. Stevens, V.;[§] Khosravi, H.;[§] Hernández Sánchez, R.* "HFIP as a versatile solvent in resorcin[*n*]arene synthesis". *Beilstein J. Org. Chem.* **2024**, *20*, 2469.
36. Osei, M.; Mirzaei, S.; Mirzaei, S. M.; Valles, A.; Hernández Sánchez, R.* "Reversible dioxygen uptake at [Cu_4] clusters ". *Chem. Sci.* **2024**, *15*, 5327.
35. Osei, M.; Mirzaei, S.; Bogetti, X.; Rahman, M. A.; Castro, E.; Saxena, S.; Hernández Sánchez, R.* "Synthesis of square planar Cu_4 clusters ". *Angew. Chem. Int. Ed*. **2022**, *61*, 41, e202209529.
34. Mirzaei, S.; Espinoza Castro, V.; Hernández Sánchez, R.* "Nonspherical anion sequestration by C-H hydrogen bonding". *Chem. Sci.* **2022**, *13*, 2026.
33. Hernández Sánchez, R.;* Mirzaei, S.; Castro, E. "Carbon-based nanotubes". *De Gruyter* **2022**.
32. Mirzaei, S.; Castro, E.; Hernández Sánchez, R.* "Conjugated Molecular Nanotubes". *Chem. Eur. J.* **2021**, *27*, 8642.
31. Castro, E.;[§] Mirzaei, S.;[§] Hernández Sánchez, R.* "Radially Oriented [*n*]Cyclo-*meta*-phenylenes". *Org. Lett.* **2021**, *23*, 87.
30. Gadjieva, N. A.; Szimai, P.; Sági, O.; Alemany, P.; Conejeros, S.; Paley, D. W.; Hernández Sánchez, R.; Fowler, B.; Náfrádi, B.; Forró, L.; Roy, X. S.; Batail, P.;* Canadell, E.;* Steigerwald, M. L.;* Nuckolls, C.* "Intermolecular Resonance Correlates Electron Pairs Down a Supermolecular Chain: Antiferromagnetism in K-Doped p-Terphenyl". *J. Am. Chem. Soc.* **2020**, *142*, 20624.

29. Mirzaei, S.;§ Castro, E.;§ Hernández Sánchez, R.* "Tubularenes". *Chem. Sci*. **2020**, *11*, 8089.

PhD and postdoc

28. Liu, T.; Yang, J.; Geyer, F.; Conrad-Burton, F.; Hernández Sánchez, R.; Li, H.; Zhu, X.; Xiao, S.; Nuckolls, C.;* Steigerwald, M.* "Stringing the Perylene Diimide Bow". *Angew. Chem. Int. Ed.* **2020**, *59*, 14303.
27. Conrad-Burton, F.; Liu, T.; Geyer, F.; Costantini, R.; Schlaus, A.; Spencer, M.; Wang, J.; Hernández Sánchez, R.; Zhang, B.; Xu, Q.; Steigerwald, M.; Xiao, S.; Li, H.; Nuckolls, C.;* Zhu, X.* "Controlling Singlet Fission by Molecular Contortion". *J. Am. Chem. Soc.* **2019**, *141*, 13143.
26. Bartholomew, A. K.; Teesdale, J. J.; Hernández Sánchez, R.; Malbrecht, B.J; Juda, C.; Ménard, G.; Bu, W.; Iovan, D. A.; Mikhailine, A. A.; Zheng, S.-L.; Sarangi, R.; Wang, S. G.; Chen, Y.-S.; Betley, T. A.* "Exposing the inadequacy of redox formalisms by resolving redox inequivalence within isovalent clusters". *Proc. Natl. Acad. Sci.* **2019**, *116*, 15836.
25. Milton, M.; Schuster, N.; Paley, D. W.; Hernández Sánchez, R.; Ng, F.; Steigerwald, M. L.; Nuckolls, C. "Defying Strain in the Synthesis of an Electroactive Bilayer Helicene". *Chem. Sci.* **2019**, *10*, 1029.
24. Hernández Sánchez, R.; Betley, T. A.* "Thermally Persistent High-Spin Ground States in Octahedral Iron Clusters". *J. Am. Chem. Soc.* **2018**, *140*, 16792.
23. Hernández Sánchez, R.;* Champsaur, A. M.; Choi, B.; Wang, S. G.; Bu, W.; Roy, X.; Chen. Y.-S.;* Steigerwald, M. L.;* Nuckolls, C.;* Paley, D. W.* "Electron cartography in clusters". *Angew. Chem. Int. Ed.* **2018**, *57*, 13815.
22. Schuster, N.; Hernández Sánchez, R.; Bukharina, D.; Kotov, N. A.; Breova, N.; Ng, F.;* Steigerwald, M. L.;* Nuckolls, C.* "A Helicene Nanoribbon with Greatly Amplified Chirality". *J. Am. Chem. Soc.* **2018**, *140*, 6235.
21. Zhang, B.; § Hernández Sánchez, R.;§ Zhong, Y.; Ball, M.; Terban, M. W.; Paley, D.; Billinge, S. J. L.; Ng, F.; Steigerwald, M. L.; Nuckolls, C.* "Hollow Organic Capsules Assemble into Cellular Semiconductors". *Nat. Commun.* **2018**, *9*, 1957. *§ = equal contribution.*
20. Milton, M.; Cheng, Q.; Yang, Y.;* Nuckolls, C.;* Hernández Sánchez, R.;* Sisto, T.* "Molecular materials for Non-Aqueous Flow Batteries with High Coulombic Efficiency and Stable Cycling". *Nano Lett.* **2017**, *17*, 7859.
19. Keener, M.; Peterson, M.; Hernández Sánchez, R.; Oswald, V. F.; Wu, G.; Ménard, G.* "Towards Catalytic Ammonia Oxidation to Dinitrogen: A Synthetic Cycle Using a Simple Manganese Complex". *Chem. Eur. J.* **2017**, *23*, 11479.
18. Amiri, H.; Shepard, K.*; Nuckolls, C.*; Hernández Sánchez, R.* "Single-Walled Carbon Nanotubes: Mimics of Biological Ion Channels". *Nano Lett.* **2017**, *17*, 1204.
17. Lee, H.; Campbell, M. G.; Hernández Sánchez, R.; Börgel, J.; Raynaud, J.; Parker, S. E.; Ritter, T.* "Mechanistic Insight Into High-Spin Iron(I)-Catalyzed Butadiene Dimerization". *Organometallics* **2016**, *35*, 2923.
16. Furneaux, A. G.; Piro, N. A.; Hernández Sánchez, R.; Garmigna, K. M.; Fey, N.; Robinson, M. J.; Kassel, W. S.; Nataro, C.* "Spectroscopic, structural and computational analysis of $[Re(CO)_3(dippM)Br]^{n+}$ (dippM = 1,1'-bis(diiso-propylphosphino)metallocene, M = Fe, *n* = 0 or 1; M = Co, *n* = 1)". *Dalton Trans.* **2016**, *45*, 4819.
15. Blass, B. L.; Hernández Sánchez, R.; Decker, V. A.; Robinson, M. J.; Piro, N. A.; Kassel, W. S.; Diaconescu, P. L.; Nataro, C.* "Structural, Computational, and Spectroscopic Investigation of [Pd(κ^3-1,1'-bis(di-*tert*-butylphosphino)ferrocenediyl)X]$^+$ (X = Cl, Br, I) Compounds". *Organometallics* **2016**, *35*, 462.
14. Hernández Sánchez, R.; Bartholomew, A.; Powers, T.; Ménard, G.; Betley, T. A.* "Maximizing electron exchange in a [Fe_3] cluster". *J. Am. Chem. Soc.* **2016**, *138*, 2235.
13. Hernández Sánchez, R.; Betley, T. A.* "Meta-Atom Behavior in Clusters Revealing Large Spin Ground States". *J. Am. Chem. Soc.* **2015**, *137*, 13949.
12. Hernández Sánchez, R.; Zheng, S.-L.; Betley, T. A.* "Ligand Field Strength Mediates Electron Delocalization in Octahedral $[(^HL)_2Fe_6(L')_m]^{n+}$ Clusters". *J. Am. Chem. Soc.* **2015**, *137*, 11126.

11. Hernández Sánchez, R.; Willis, A. M.; Zheng, S.-L.; Betley, T. A.* "Synthesis of Well-Defined Bicapped Octahedral Iron Clusters $[(^{tren}L)_2Fe_8(PMe_2Ph)_2]^n$ (n = 0, –1)". *Angew. Chem. Int. Ed.* **2015**, *54*. 12009.
10. Cramer, S. A.; Hernández Sánchez, R.; Brakhage, D. F.; Jenkins, D. M.* "Probing the role of an Fe^{IV} tetrazene in catalytic aziridination". *Chem. Commun.* **2014**, *50*, 13967.
9. Wu, B.; Hernández Sánchez, R.; Bezpalko, M. W.; Foxman, B. M.; Thomas, C. M.* "Formation of a Heterobimetallic Zirconium/Cobalt Diimido Complexes via a Four-Electron Transformation". *Inorg. Chem*. **2014**, *53*, 10021.
8. Powers, T. M.; Gu, N. X.; Fout, A. R.; Baldwin, A. M.; Hernández Sánchez, R.; Alfonso, D. M.; Chen, Y.-S.; Zheng, S.-L; Betley, T. A.* "Synthesis of Open-Shell, Bimetallic Mn/Fe Trinuclear Clusters". *J. Am. Chem. Soc*. **2013**, *135*, 14448.
7. Eames, E.; Hernández Sánchez, R.; Betley, T. A.* "Metal atom lability in polynuclear complexes". *Inorg. Chem.* **2013**, *56*, 5006.
6. Kraft, S. J.; Hernández Sánchez, R.; Hock, A. S.* "A Remarkably Active Iron Catecholate Immobilized in a Porous Organic Polymer". *ACS Catal.* **2013**, *3*, 826.
5. Wong, L. J.; Hernández Sánchez, R.; Glancy Logan, J.; Zarkesh, R. A.; Ziller, J. W.; Heyduk, A. F.* "Disulfide reductive elimination from an iron(III) complex". *Chem. Sci.* **2013**, *4*, 1906.
4. Harris, T. D.; Zhao, Q.; Hernández Sánchez, R.; Betley, T. A.* "Expanded Redox Accessibility via Ligand Substitution in an Octahedral Fe_6Br_6 Cluster". *Chem. Commun.* **2011**, *47*, 6344.
3. Yamazaki, Y.; Hernandez-Sanchez, R.; Haile, S.* M. "Cation nonstoichiometry in yttrium-doped barium zirconate: phase behavior, microstructure, and proton conductivity". *J. Mater. Chem.* **2010**, *20*, 8158-8166.
2. Telila, H.; Mamo, T.; Hernandez Sanchez, R. "The Fabrication of nanoparticle CsH_2PO_4 Electrolyte for Fuel Cell Applications". *Caltech Undergraduate Research Journal* **2009**, Vol. *9* (No. 1), 33 – 39.
1. Yamazaki, Y.; Hernandez-Sanchez, R.; Haile, S. M.* "High Total Proton Conductivity in Large-Grained Yttrium-Doped Barium Zirconate". *Chem. Mater.* **2009**, *21* (13), 2755-2762.

❖ Patents

Independent career

3. Arora, S.; Mirzaei, S.; Espinoza Castro, V. M.; Hernández Sánchez, R. "Compositions comprising macrocyclic hosting moieties". U.S. Non-Provisional Patent **US 18/101,092** filed January 24th, 2023.
2. Mirzaei, S.; Castro, E.; Hernández Sánchez, R. "Synthesis of Nanotubular Molecules". U.S. Non-Provisional Patent **US 17/386,100** filed July 27th, 2021.

As postdoc

1. Milton, M.; Cheng, Q.; Yang, Y.*; Nuckolls, C.*; **Hernández Sánchez, R.***; Sisto, T.* "Non-Aqueous Flow Batteries". **US 16/792,501** and **WO 2019/036633 A1** filed Aug 17th, 2018.

❖ Books

Independent career

1. Hernández Sánchez, R.;* Mirzaei, S.; Castro, E. "Carbon-based nanotubes". *De Gruyter published April **2022**.*

❖ Synergistic Activities and Contributions to Diversity

4. Founder of Tips For Students (TFS), program designed to guide undergraduates in their career decision making process by conveying the story of recent bachelor graduates working in academia and industry. **June 2021 – present**.
3. Faculty support and founder of the Alliance for Diversity in Science and Engineering (ADSE) Chapter at the University of Pittsburgh. **2019 – 2023**. *Currently a new ADSE chapter at Rice University is being conceived and developed*.
2. Mentor at Eureka Street Corporation (www.eurekastreet.org). **2018 – present**. Student mentoring program to support students from minority serving institutions on their applications to graduate programs in Physics and Chemistry in the USA. Students mentored (2018-present) = 3.

1. City Coordinator of "Clubes de Ciencia México" (www.clubesdeciencia.mx). **2016 – present**. Science outreach program designed to bring hands-on week-long workshops in STEM to students in high school and undergraduate in Mexico. The instructors are PhD/postdocs volunteers from top universities in the United States and Mexico. Since my involvement, we have reached more than 600 students in Chihuahua City.

❖ Invited Presentations

54. Pacifichem, December **2025**, Honolulu, Hawaii.
53. University of Rochester, May **2025**, Rochester, New York.
52. University of California, Los Angeles, April **2025**, Los Angeles, California.
51. University of California, Riverside, April **2025**, Riverside, California.
50. Supramolecular Inorganic Chemistry Symposium, American Chemical Society National Meeting, March **2025**, San Diego, CA, USA.
49. Andrews University, Zoom seminar, January **2025**.
48. 2024 Southwest Regional Meeting (SWRM), October **2024**, Waco, Texas.
47. University of Southern California, October **2024**, Los Angeles, California.
46. LXVII Physics National Convention, Autonomous University of Chihuahua (UACH), October **2024**, Chihuahua City, Mexico.
45. Supramolecular Chemistry Symposium, National Autonomous University of Mexico (UNAM), October **2024**, Mexico City, Mexico.
44. ACS Committee on Minority Affairs Luncheon keynote Speaker, ACS National Conference, August **2024**, Denver, Colorado.
43. 2024 Harthcock Graduate Professional Development Symposium, Texas A&M, June **2024**, College Station, Texas.
42. American Chemical Society Greater Houston Section, Zoom seminar, June **2024**.
41. Organometallic subgroup at ExxonMobil, December **2023**, Baytown, Texas.
40. Materials that Build Bridges between the Discrete and the Continuous, University of Angers, November **2023**, Angers, France.
39. Southwestern Oklahoma State University, October **2023**, via Zoom.
38. ITESM Campus Monterrey, October **2023**, Monterrey, Mexico.
37. C&EN Talented 12 Class 2023. American Chemical Society National Meeting, August **2023**, San Francisco, CA, USA.
36. Sustainable Catalysts for C1 Valorization Supported by the PRF. American Chemical Society National Meeting, August **2023**, San Francisco, CA, USA.
35. University of California, Irvine, April **2023**, Irvine, CA, USA.
34. "Scientia: contributions to the betterment of the world", Rice University, March **2023**, Houston, TX, USA.
33. Supramolecular and Organic Materials Chemistry, ACS Southwest Regional Meeting, November **2022**, Baton Rouge, LA, USA.
32. Gulf Coast Undergraduate Research Symposium (keynote speaker), Rice University, October **2022**, Houston, TX, USA.
31. University of Central Florida, September **2022**, Orlando, FL, USA.
30. Young Research Conference, Alliance for Diversity in Science and Engineering, Texas A&M University, February **2022**, College Station, TX, USA.
29. Rice University, February **2022**, Houston, TX, USA.
28. University of Houston, February **2022**, Houston, TX, USA.
27. Breaking Barriers Through Chemistry, sponsored by Thieme and The University of Texas A&M (online), August **2021**.
26. The College of New Jersey, departmental seminar (online), March **2021**.
25. American Chemical Society, Division of Inorganic Chemistry "Periodic Table Talks", national conference (online), Feb **2021**.

24. Autonomous University of Juarez City, October **2020**, Juarez City (online), Mexico.
23. Tesla Institute, June **2020**, Juarez City (online), México.
22. Hampton University, October **2019**, Hampton, VA, USA.
21. University of Maryland, October **2019**, College Park, MD, USA.
20. Northwestern University, September **2019**, Evanston, IL, USA.
19. University of Colorado Boulder, February **2018**, Boulder, CO, USA.
18. Indiana University Bloomington, February **2018**, Bloomington, IN, USA.
17. University of California San Diego, January **2018**, San Diego, CA, USA.
16. University of California Riverside, January **2018**, Riverside, CA, USA.
15. University of Pittsburgh, January **2018**, Pittsburgh, PA, USA.
14. University of Illinois Urbana-Champaign, January **2018**, Champaign, IL, USA.
13. Princeton University, January **2018**, Princeton, NJ, USA.
12. University of Minnesota, December **2017**, Minneapolis, MN, USA.
11. Tufts University, December **2017**, Medford, MA, USA.
10. Duke University, December **2017**, Durham, NC, USA.
9. University of Massachusetts Amherst, December **2017**, Amherst, MA, USA.
8. Columbia Friday Synthesis Symposium, November **2017**, New York, USA.
7. Boston Regional Inorganic Colloquium (BRIC, Harvard), April **2017**, Cambridge, MA.
6. MRSEC Seminar, Columbia University, October **2016**, New York, USA.
5. Nanostructure in the City Symposium, October **2016**, New York, USA.
4. Columbia Friday Synthesis Symposium, May **2016**, New York, USA.
3. Undergraduate Chemistry Seminar (ITESM), October **2015**, Monterrey, México.
2. MIT Enterprise Forum Mexico, August **2015**, Oaxaca, México.
1. Movimiento NOMADX, August **2015**, Chihuahua, México.

❖ **Contributed Presentations**

27. Welch Conference, October **2024**, Houston, TX.
26. American Chemical Society National Meeting, March **2024**, Denver, CO.
25. American Chemical Society National Meeting, March **2024**, Denver, CO.
24. American Chemical Society National Meeting, March **2024**, Denver, CO.
23. International Conference on Coordination Chemistry, July **2024**, Fort Collins, CO.
22. Gordon Research Conference, Inorganic Reaction Mechanisms, March **2023**, Galveston, TX.
21. 16th International Symposium on Macrocyclic and Supramolecular Chem., June **2022**, Eugene, OR.
20. American Chemical Society National Meeting, March **2022**, San Diego, CA.
19. American Chemical Society National Meeting, March **2022**, San Diego, CA.
18. American Chemical Society National Meeting, March **2022**, San Diego, CA.
17. American Chemical Society National Meeting, August **2019**, San Diego, CA.
16. MRSEC retreat seminar, Columbia University, May **2017**, New York, USA.
15. American Chemical Society National Meeting, April **2017**, San Francisco, CA.
14. Gordon Research Conference and Seminar: Inorg. Reaction Mech., March **2017**, Houston, TX.
13. 5th European Conference on Molecular Magnetism, September **2015**, Zaragoza, Spain.
12. American Chemical Society National Meeting, August **2015**, Boston, MA.
11. American Chemical Society National Meeting, August **2014**, San Francisco, CA.
10. Gordon Research Conference and Seminar: Inorganic Chemistry, June **2014**, Biddeford, MA.
9. American Chemical Society National Meeting, April **2013**, New Orleans, LA.
8. American Chemical Society National Meeting, March **2012**, San Diego, CA.
7. Boston Regional Inorganic Colloquium (BRIC), October **2011**, Worcester, MA.
6. Bachelor Thesis Proposal Seminar, November **2009**, Monterrey, México.
5. Undergraduate Chemistry Seminar: "Nanodics at interfaces: combined application of SPR and AFM", October **2009**, Monterrey, México.

4. Undergraduate Chemistry Seminar: "Yttrium-Doped Barium Zirconate. Defect Chemistry Study to Understand its Protonic Conductivity", November **2008**, Monterrey, México.
3. Undergraduate Chemistry Seminar: "Effect of Barium Deficiency on the Proton Conductivity of $Ba_{1-x}Zr_{0.8}Y_{0.2}O_{3-\delta}$", September **2007**, Monterrey, México.
2. Summer Undergraduate Research Fellowship Seminar: "Effect of Barium Deficiency on the Proton Conductivity of $Ba_{1-x}Zr_{0.8}Y_{0.2}O_{3-\delta}$", August **2007**, Pasadena, CA.
1. Undergraduate Chemistry Seminar: "Thermal Differential Analysis of a Vitreous Sample", November **2006**, Monterrey, México.

❖ Collaborators

Collaborators at Rice University: Prof. James Shee and Prof. Matthew Jones (Department of Chemistry), and Prof. Matteo Pasquali (Department of Chemical and Biomolecular Engineering).
Collaborators at The University of Texas at Austin: Prof. Michael J. Rose (Department of Chemistry).
Collaborators at ITESM Mexico: Prof. Marcelo Videa (School of Engineering and Sciences).
Collaborators at University of Pittsburgh: Prof. Peng Liu (Department of Chemistry).
Collaborators at University of Texas, El Paso: Prof. Luis Echegoyen (Department of Chemistry and Biochemistry).
Collaborators at Argonne National Laboratory: Dr. Yu-Sheng Chen (ChemMatCARS – The University of Chicago).
Collaborators at University of Angers (CNRS): Prof. Patrick Batail.
Graduate Advisor: Professor Theodore A. Betley (Harvard).
Postdoctoral Sponsors: Professor Colin Nuckolls (Columbia) and Columbia Nano Initiative.

❖ Mentoring Accomplishments

Current students*:*
Postdoctoral supervision:

Dr. Hormoz Khosravi	08/2023 – present
Dr. Hong-Lei Xu	11/2023 – present

Ph.D. students:

Manasseh Osei	12/2019 – present
Victor Espinoza Castro	07/2020 – present
Nghi La	10/2022 – present
Jorge Rodas	02/2024 – present
Lul Sharif	11/2022 – present
Odunola Orege	11/2022 – present
Alejandro Fuentes Beltran	08/2024 – present

Undergraduate students:

Mohammad Bilal	08/2022 – present
Yehjune Moon	02/2024 – present
Agustin Valles	01/2023 – present
Charlotte Lawrence	11/2023 – present
Sam de Armas	08/2024 – present

Past students:
Postdoctoral supervision:

Dr. Xiangquan (Eric) Hu	06/2023 – 08/2024
Dr. Edison Arley Castro Portillo	09/2018 – 06/2021
Dr. Thomas Allen	09/2018 – 08/2020

Graduate students:

Saeed Mirzaei	08/2022 – 11/2024
Valeria Stevens	11/2023 – 10/2024
Saber Mirzaei	06/2019 – 12/2022
Swati Arora	04/2021 – 08/2022
Brett Lucht	01/2020 – 07/2022
Keren Lee	01/2021 – 08/2021
Mohammad Azizur Rahman	12/2018 – 07/2021
Omri Abarbanel	12/2018 – 02/2020

Undergraduate students:

Raúl Paredes Noroña	Summer 2024
Ava Grace Slobin	Summer 2024
Victor Caycedo	Fall 2023, Spring 2024
Mira Goldstein	Fall 2023
Nicholas Figureoa	Summer 2023
Nicole Imming	Spring 2023
Gabriella Prieto	Spring, Summer 2022
Gabriella Belsito	Spring 2022
Nicolas D'Annunzio	Fall 2018, Spring 2019
Ryan W. McLane	Fall 2018, Spring 2019
Madison Keating	Fall 2018, Spring 2019
James Dages	Fall 2018, Spring 2019
Bridget Glessner	Fall 2018, Spring 2019
Addison Averill	Spring 2019
Derek Lamb	Spring 2019
Emily Nicola	Summer 2019

Number of PhD-related exams and/or defenses served: 12 at Rice (total 34)

❖ Teaching Accomplishments

- Chemistry 366 (Rice), Fall 2024 – Inorganic Chemistry Laboratory – 9 undergraduate students.
- Chemistry 590 (Rice), Fall 2024 – Professional Masters Seminar in Applied Chemistry – 6 master students.
- Chemistry 600 (Rice), Spring 2024 – Graduate Seminar – 27 graduate students.
- Chemistry 475/575 (Rice), Spring 2024 – Physical Methods in Inorganic Chemistry – 8 graduate and 4 undergraduate students.
- Chemistry 366 (Rice), Fall 2023 – Inorganic Chemistry Laboratory – 22 undergraduate students.
- Chemistry 475/575 (Rice), Spring 2023 – Physical Methods in Inorganic Chemistry – 5 graduate and 6 undergraduate students.
- Chemistry 1130/Chemistry 2180, Spring 2022 – Inorganic Chemistry (capstone course) – 26 undergraduate students.
- Chemistry 2120, Fall 2021 – Descriptive Inorganic and Organometallic Chemistry – 16 PhD students.
- Chemistry 1130/Chemistry 2180, Spring 2021 – Inorganic Chemistry (capstone course) – 2 graduate and 26 undergraduate students.
- Chemistry 2120, Fall 2020 – Descriptive Inorganic and Organometallic Chemistry – 17 PhD students.
- Chemistry 1130, Spring 2020 – Inorganic Chemistry (capstone course) – 33 undergraduate students.
- Chemistry 2120, Fall 2019 – Descriptive Inorganic and Organometallic Chemistry – 17 PhD students.
- Chemistry 2120, Fall 2018 – Descriptive Inorganic and Organometallic Chemistry – 18 PhD students.

❖ Service on Departmental Committees

At Rice

Graduate Admission Committee	2022 – present
Seminar Committee	2022 – present
Faculty Search Committee on Energy and Sustainability	2024 – 2025
Faculty Search Committee on chemical biology and biomaterials	2023 – 2024
Graduate Studies Committee	2022 – 2024
Safety Committee	2022 – 2024

At Pitt

Diversity	2018 – 2022
Graduate Admission	2018 – 2022
Graduate Curriculum Committee	2021 – 2022
Research Professor Search Committee	2020
Graduate Student Advising Committee	2018 – 2020
Graduate Recruiting	2018 – 2020

❖ Scientific Reviewing Activities

Journal reviewing for:

Journal of the American Chemical Society, Nature Communications, Chemical Science, Organic Letters, Inorganic Chemistry, Chemical Communications, Environmental Science & Technology, Tetrahedron Letters, New Journal of Chemistry, Dalton Transactions.

Proposal reviewing for:

American Chemical Society Petroleum Research Fund (ad hoc), National Science Foundation (panels and ad hoc), Department of Energy (ad hoc), National Institutes of Health (panel)